

ON SUSTAINING ECONOMIC GROWTH

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ABSTRACT

This paper investigates the problem of sustaining economic growth, viewed from the perspective of how growth is affected by government policy choices as well as by the nature of government. Special attention is given to the role of rent seeking in limiting growth. Three types of economic growth are identified from the standpoint of the sources of growth, and each type is identified with an element of the aggregate production function. While any of the three types may persist for a time under the right circumstances, it is argued that only one of these can be permanently sustained. Sector-specific interventionist policies that speed up either of the other two types of growth will slow down the type of growth that can be permanently sustained and are therefore likely to lead to a period of slow growth or stagnation following a period of rapid growth. Finally, it is argued that building strong democratic institutions is the best and most basic way to guarantee the type of growth that can be sustained permanently.

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Introduction: the Aggregate Production Function.

This paper investigates the problem of sustaining economic growth, viewed from the perspective of how growth is affected by government policy choices as well as by the nature of government. Special attention is given to the role of rent seeking in limiting growth. Since the seminal paper by Solow [1957], economists have often examined growth through the prism of an aggregate production function. In Parente and Prescott [2004], this is a Cobb-Douglas, constant-returns-to-scale function with Hicks-neutral technological change, which they claim provides a good empirical fit to the growth experiences of many different nations. Consequently, we shall use this form, adapting it to our purposes. It can be written:

$$Y = EA(K^\theta)(N^{1-\theta}), \quad (1).$$

where Y is aggregate output or value added in an economy, K is capital, N is labor, A indexes the world's stock of technical knowledge, E indexes the efficiency with which the economy uses this knowledge, and θ is the share of capital in Y . Here θ includes not only the share of physical capital, but also that of human and intangible forms of capital, such as the "trust" or "social" capital introduced below. EA is the economy's total factor productivity (hereafter TFP). Given Hicks-neutral technology, technological progress (increases in TFP) magnifies output without affecting the marginal rate of substitution between K and N at any K/N .

The values of θ and A above are assumed to be common across all economies at any point in time—with θ believed to be on the order of two-thirds—whereas K , N , and E vary from one economy to another, with E lying between zero and one. When E is close to one, the policies and institutions of the economy in question enable it to make the best possible use of the world's stock of technical knowledge. When E is well

below one, the economy is making less than optimal use of this knowledge. All forms of inefficiency show up through their impacts on E , which is therefore a general index of an economy's efficiency.

However, the main reason for E to lie below one, according to Parente and Prescott, is that the policies and institutions of the economy in question are restricting its producers' choices of technology, either directly or by distorting incentives. The effect of this is similar to forcing an economy inside its production-possibilities frontier. Such restrictions are maintained in order to protect rents earned by some inputs, which would be vulnerable to increased competitive pressures, were the restrictions to be relaxed. The inputs in question are specialized to existing technologies, and their owners may be able to exercise control over supply. Since A is rising over time, a restriction that freezes technology in an economy will cause E to fall, as the existing technology becomes more and more backward relative to best choices available. Thus E measures efficiency in any economy, relative to best practices.

Using (1), Parente and Prescott argue that differences in GDP per capita, both over time and across nations at any given point in time, result largely from differences in TFP. Differences at any given point in time result mainly from differences in E from one country to another, reflecting incentive differences and different restrictions on producers' choices of technology. Growth "miracles" occur when changes in policies and institutions cause a rapid increase in E , as via the economic reforms in China and Vietnam. The ideal outcome is when E remains close to one, allowing an economy to fully benefit from increases in A and from the capital deepening under competitive conditions to which these increases give rise, on which more below.

A virtue of "free trade clubs"—basically common markets (such as the EU or NAFTA) whose member states have enough sovereignty to choose their own production technologies—is that they tend to erode constraints that keep E down. Restrictions that hold in one member nation of such a club but not in all—such as work rules that raise production costs—are vulnerable to competitive pressures that originate in a member without these restrictions. By expanding the market, these clubs also raise the elasticity of demand

facing any domestic industry producing tradable products. As a result, if this industry abandons or is freed from restrictions that were increasing its costs or reducing its quality, it can hope to be rewarded with more income when it cuts prices or improves quality.

In fact, there is evidence to suggest that sustained economic growth resulting in sustained improvements in living standards is a relatively recent phenomenon, dating from the 18th century. In his famous treatise, Kuznets [1966] called this “modern economic growth (or MEG).” Technological progress dates well back into pre-history, but before 1700, this tended to result in population growth rather than in sustained living standard increases. Parente and Prescott argue that the classical theory of Malthus [1965] and Ricardo [1951] goes a long way toward explaining this. To invoke it, we need a “traditional” production function that differs somewhat from (1), taking the form:

$$Y_T = A_T(K_T)^\phi(N_T)^\mu(L_T)^{(1-\phi-\mu)}, \quad (2).$$

where the T -subscript denotes traditional production and L is land or possibly another factor of production which is scarce and whose supply cannot be increased. Also ϕ is capital’s share of output, μ is labor’s share, $(1 - \phi - \mu)$ is the share of land under constant returns to scale, and A_T is total factor productivity.

In the traditional economy, increases in TFP are assumed to lead to increases in per-capita consumption, which lead in turn to population growth and thus to increases in N_T . Against the fixed endowment of land, increases in N_T and in K_T give rise to diminishing returns, and there is then a trade-off between population growth and increases in living standards. In Malthus and Ricardo, population continues to expand until most members of society are reduced to subsistence, but as Parente and Prescott point out, this was clearly not the case in many places and times prior to 1700. In their scenario, social policies and institutions determine the population and living standards of any given society, which tries to set the highest living standard that is sustainable. If it sets a living standard that is too high—and thus a population-to-land ratio that is too low—it will be unable to defend its territory. Some or all of its land will be expropriated, and

its living standard will fall. For the world as a whole, however, a social control over population was lacking, since some societies used emigration as a way to keep their own populations from growing too large, and migrating hunter-gatherer societies would sometimes split up when they got too large.

Given the formulation in (2), when will a society switch from traditional to modern economic growth? Plausibly, this will happen when the return on investment using the “modern” production function (1) exceeds that from the traditional function (2), taking into account the protection of rents that underlies the efficiency coefficient, E . Because E varies from economy to economy, the transition to modern growth could happen at quite different times in different countries, as it clearly did. Latecomers to industrialization may then catch up to the original leaders or fail to do this, depending on whether policy changes occur that raise E .

Parente and Prescott’s formulation of traditional production is ingenious, but some economic historians will have issues with it. In many times and places prior to 1700, land does not appear to have been a scarce factor of production (eg., North and Thomas [1973, 1977]; Domar [1970]). Prior to the Neolithic Revolution, which transformed hunter-gatherer societies into economies based on agriculture, the populations of wild animals and plants would best serve as the third factor of production. These were not initially scarce, but owing to a combination of population growth, technological improvements in hunting, and consequent decreases in the stocks of animals and plants, they became so prior to the Neolithic Revolution. The resulting diminishing returns and falling living standards motivated the switch to agriculture [North and Thomas 1977]. Similarly, an explanation of human bondage is that it was a way to keep down labor’s share of income and output in conditions in which labor rather than land was the scarce factor of production [Domar 1970; North and Thomas 1973, ch. 3]. However, population growth eventually made labor more plentiful and helped to bring bondage to an end, since competition among workers for jobs then held down the earnings of labor.

Finally, one can ask why the “traditional” production function is for traditional economies only. Modern economies rely heavily on non-renewable resources, whose supplies are limited. Equation (1) and the

parameter values used by Parente and Prescott imply higher levels of long-term growth than are observed, as we shall see. Thus removing the resource constraint from the modern production function may be premature. Nevertheless, the scope and coverage of Parente and Prescott's work are impressive.¹

Types of Economic Growth and Limits to Growth

Next we adapt the aggregate production function in (1) to our own ends. To begin with, we distinguish three types of economic growth, in place of the usual two. *Extensive* growth is defined as growth of output or value added owing to increases in inputs, with technology held constant, while *intensive* growth is growth of output or value added owing to technological progress, with inputs held constant. In (1), this is also growth of TFP or of EA , whereas extensive growth is growth with constant EA , implying that E is falling at the same percentage rate that A is rising—estimated by Parente and Prescott to be about 2% per year. In addition, we can divide intensive growth into growth based on increases in E , with A constant, and growth based on increases in A , with E constant.

This gives three basic types of economic growth: (a). *extensive*; (b). *intensive and based on raising E —in particular, on catching up technologically by importing technology with a history of use abroad*; (c). *intensive and based on increases in A —that is, on domestic innovation and sharing of new technology developed abroad*. An economy passes from (a) to (b) and/or (c) when most economic growth is accounted for by broadly-defined technological progress rather than by quantity increases in the factors of production, mainly capital. It passes from (b) to (c) as it relies more and more on domestic innovation and sharing of new technology to generate growth, rather than on technology catch-up. One indication of this is likely to be a rising ratio of exports to imports in technology trade. The usual two-way classification [eg., Eichengreen 2007] lumps (a) and (b) together by defining “extensive” growth as

growth with given A —that is, as growth with given technological knowledge worldwide. However, the limits to growth are different in the case of (a) than in the case of (b), and this is why we separate them.

We can rewrite equation (1) as $y = E A k^\theta$, where $y = Y/N$ is output per unit of labor and $k = K/N$ is capital per unit of labor. In terms of growth rates, we have:

$$y^g = E^g + A^g + \theta k^g, \quad (3).$$

if we ignore second-order effects, where the g superscript denotes rate of growth—ie., $y^g = dy/y$, where dy is the first-order change in y over a given time period. E^g and A^g are the growth rates of E and A , and θk^g is the rate of extensive growth. Thus y^g is the sum of types (a), (b), and (c) growth rates of y , although as will be shown, this conceals a key complementarity between extensive and intensive growth.

Since E is the crucial parameter in (1), we next set out its key arguments. Let A_D denote the domestic level of technology and β_D index the severity of domestic barriers to the movement of capital and labor between sectors. These include exit as well as entry barriers and therefore subsidies that impede mobility, as well as legal prohibitions and geographical constraints, etc. Also let I_D be a vector denoting the costs of various types of information relevant to the performance of an economy. These include information about prices and about new technologies, about the nature of products being bought and sold, the past behavior of buyers and sellers, etc. Whereas β_D indexes the cost of moving labor and capital, I_D indexes the costs of acquiring another key resource, namely information.

Since E indexes relative efficiency, we then write:

$$E = E(k, \beta_D/\beta, A_D/A, I_D/I, P_s), \quad (4).$$

with β , A , and I denoting the values of these variables in “best-practice” economies where E is set equal to one. In particular, A gives the level of technology in such an economy, as in the preceding section. Generally, E is increasing in A_D/A and decreasing in β_D/β and I_D/I , although not always. For example, a degree of secrecy about new products under development often helps to encourage entrepreneurship.

Entry of k into the right-hand side of (4) relates to destructive rent seeking, or the use of resources to redistribute wealth without increasing it. Rent seeking eventually becomes a growing problem as k increases, with no change in A_D , because the return on investment or marginal product of k is decreasing in k , and using resources to seek rent is an alternative to using them for productive investment. Let e^R be the share of Y lost to destructive rent seeking. That is, if all resources used to redistribute wealth were used instead to produce output, y would rise by $e^R y$, which is therefore the *direct* cost of rent seeking. Let $E^R = (1 + e^R)$ and $y^G = E^R y = E^R EA(k^\theta) = E^G A(k^\theta)$ be y gross of direct rent-seeking cost, where E^G is efficiency measured without subtracting this cost—or the efficiency that would prevail if the direct cost of rent seeking were zero. As such, E^G is independent of k , and $E = E^G/E^R$, which gives $E^g = (E^G)^g - (E^R)^g$. Thus E can fall over time if rent seeking (E^R) is increasing. The marginal product of k , y_k , is then given by:

$$y_k = \theta(EA)/k^{(1-\theta)} + (E_k A k^\theta) = \theta y/k + (E_k/E)y = \theta y/k - [(E^G E_k^R)/E(E^R)^2]y, \quad (5).$$

where E_k is the change in E and E_k^R is the change in E^R caused by a unit increase in k .

Starting from a point where the returns on productive investment (y_k) and on investment in rent seeking are equal, suppose k increases by a unit. If rent seeking (E^R) remains constant, the return on productive investment will fall below the return on rent seeking, and resources will be moved from creating wealth into efforts to redistribute, which is to say that E^R will rise and therefore E will fall. Since E^R is increasing and E is decreasing in k , y_k can be negative, although never when $E_k = 0$ (or is small enough to ignore). The more the return on productive investment is externalized—or realized by entities other than those who finance the investment—and the more the return on rent seeking is internalized, the faster is rent seeking likely to grow as k falls. In addition to the direct cost of rent seeking, there is an *indirect* cost, since rent seeking results in barriers to resource mobility behind which rents form, which is to say that *future* values of β_D and/or of I_D will be higher, the higher is k today. For

simplicity, the current values of β_D and of I_D are assumed to reflect past rent seeking and thus to index the existing volume of rents. Finally, P_s is a political system variable (to be defined more completely below) since the nature of its polity is likely to influence the nature and efficiency of an economy.

As long as k is not too high, the diversion of resources into rent-seeking may be small, but for values of k above some critical level—which depends on the nature of the technologies in use, as well as on existing barriers to resource mobility—the effect on E can be strong. A unit increase in k lowers y_k directly and also by lowering E . But the fall in E then lowers y_k again, which gives rise to more rent seeking and could set off a downward spiral, whose strength depends on how fast y_k falls vs. the rate of decrease in the return to rent seeking. (On the interaction between productive investment and rent seeking, see Murphy, Shleifer, and Vishny [1993].)

Suppose initially that E_k is small enough to ignore. Then (5) implies that $k^g = y^g - (y_k)^g$, where $(y_k)^g$ is the rate of change of the marginal product of capital over time. Substituting this into (3) gives:

$$y^g = [(E^g + A^g)/(1 - \theta)] - [\theta(y_k)^g/(1 - \theta)]. \quad (6)$$

An increase in TFP raises the marginal product of capital at any given capital-to-labor ratio, increasing the value of k that is compatible with any given marginal product of capital, in this sense creating new opportunities for extensive growth and helping to stave off increases in rent seeking. This is the complementarity between extensive and intensive growth referred to above. Since θ is about two thirds, a 2% increase in A , with constant E , will raise the value of k compatible with a given y_k by 6%.

More generally, (6) becomes $y^g = A^g/(1 - \theta)$ when E and y_k remain constant. If free movement of financial capital internationally equates the marginal product of capital in different countries, or if for any other reason, k adjusts to maintain a given y_k , both k and y will increase by no less than 6% per year, with two-thirds of this growth coming from capital deepening, rather than increases in TFP. This is one reason why all nations that have achieved MEG have dramatically raised their capital-to-labor ratios. It

is also why equation (1) and the parameter values used by Parente and Prescott imply higher levels of long-term growth than are generally observed. The net effect of the increase in EA plus the capital deepening that it induces is to leave K/Y and $(dK)/Y$ (or the investment share of Y) constant.

Even though the greater part of the growth of y may be extensive, in the form of capital deepening, the intensive part is crucial. If an economy is unable to generate any intensive growth, its growth will eventually die out, owing to an inability to increase some inputs and consequent diminishing returns to those inputs that can be increased, notably capital. This is without taking rent seeking into account. Purely extensive growth is possible in a highly-controlled, state-managed economy, notably the Soviet-type economy (hereafter, STE). The controls in question may even speed up growth for a time, since they can be useful for generating high rates of saving and capital formation (although usually not for efficient investment of this capital) and for channeling resources into areas targeted for growth.

Growth of Y that is purely extensive occurs mainly because of a rising capital-to-labor ratio—the result of high rates of forced saving and investment—and, for a time, rising labor force participation, falling unemployment, and migration of labor from agriculture to industry. Eventually, however, it becomes difficult to expand labor input further or to re-allocate labor to more productive work. Then the expansion of capital will cause the marginal product of capital to fall, a phenomenon documented in the former Soviet Union by Weitzman [1970] as early as the 1960s. In the Soviet Union, the capital-to-labor ratio soared over time, while the return on investment imitated Niagara Falls [Easterly and Fischer 1995]. According to one estimate, Soviet economic growth of GNP per capita fell from 3.6% per year over 1960-1970 to .4% over 1986-1990 [Ofer 2004]. Total factor productivity growth became negative during the 1970s [Ofer 2004] and remained that way until the country's demise at the end of 1991.

With purely extensive growth, suppose that domestic financial flows are insulated from world markets—which was true of the Soviet economy—and that the supply of savings available for domestic

investment comes entirely from domestic sources and is given by $S = sY = dK$, where s is a constant propensity to save. When $E^g + A^g = 0$, (4) becomes $y^g = \theta[(sEA/k^{(1-\theta)}) - N^g] = (sy_k - \theta N^g)$, where N^g is the growth rate of the labor force. Thus y^g is decreasing in k , even without taking rent seeking into account. To maintain a constant rate of growth as k increases would require an ever higher share of Y to be devoted to saving and investment, while opening domestic financial markets would most likely reduce growth by causing an outflow of domestic savings seeking higher returns abroad. If the elasticity of substitution between capital and labor is below one, as Weitzman—and later Easterly and Fischer—believed to be true of the Soviet economy, the retardation of growth will be even sharper as k rises, since the greater difficulty of substituting capital for labor will cause y_k to fall more rapidly. Easterly and Fischer estimate an elasticity of substitution of only .37, although their method of estimation has been criticized [Beare 2008].

Sooner or later, technological progress becomes necessary to keep down the consumption cost of extensive growth. However, the STE crushed domestic innovation because of the shortage/monopoly nature of the system, as well as its over-centralization (or bureaucratization) and the "soft" budget constraint [Kornai 1980]. Over time, it also became less able to absorb technology imported from developed Western nations, in the sense of making productive use of this technology within the STE framework. This caused the return on investment to fall to near zero and led to rising technological backwardness vis-à-vis the West outside the high-priority space and defense-related industries.

The failure to generate intensive growth led to stagnation for most STEs by the mid-1980s. Stagnation with falling TFP was possible because, as noted above, destructive rent seeking tended to rise as y_k fell. More specifically, falling profitability of state enterprises plus their financial indiscipline within the STE (the soft budget constraint) caused growing budget deficits, in the broad sense of the government's borrowing requirement. These deficits were mostly monetized, which generated repressed

inflation in the form of growing shortages at official prices, owing to price controls. Thus these systems became more and more dysfunctional [Aslund 2002; Carson 1997, ch. 6; Goldman 1991]. Because of the rising gaps between official and demand prices, the "second" or "shadow" economies of these nations expanded by sucking resources out of the official or "first" economies.

The rising differences between official and demand prices were a direct consequence of falling investment returns, which increased the budget deficit, since taxes depended on profitability of state firms. These differences also caused rent seeking to rise, because control over scarce products and resources obtained at official prices yielded greater rent, often taken as gifts and bribes.² More resources went not only into gaining control over supply, but also into obtaining goods and services for own use via queuing, searching, and waiting.

The problem of stagnating growth in the STEs found no solution within the basic framework of state planning and management, requiring instead that this be replaced by a market economy, together with its supporting institutions and legal foundations. This led to the upheaval of economic transition for nearly one third of the world's population. The STEs left a legacy of widespread inefficiency for the successor transition economies, and, in most cases, considerable resistance to the necessary market-oriented reforms by those whose rents were threatened [Aslund 2002]. Success in transition therefore turned mainly on the ability of an economy to generate new and efficient greenfield investment, in the form of new enterprises, rather than on its ability to transform the former state sector into efficient market-oriented producers [McMillan and Woodruff 2002], a task that proved to be Herculean. China and Vietnam were especially successful in generating greenfield investment.

In eastern and central Europe, rent seeking continued into transition and became the major enemy of market-oriented reforms [Aslund 2002]. The perpetuation of rent seeking, asset stripping, and of subsidies and controls that tied up capital in state or former state enterprises and prevented it from

becoming available to new firms with growth potential was brought about by the former Communist Party or *nomenklatura* elite, who relied on their insider contacts and knowledge. Thus success in transition required the emergence of a new elite capable of challenging the former *nomenklatura* for political and economic power, and therefore a political transformation from dictatorship to democracy [Aslund 2002], which was more successful in some countries than in others. (See Popov [2000].) In China, the launching of successful economic reforms depended on the emergence of new leadership within the Communist Party after the death of Mao.

There are limits as well to intensive growth of type (b), since “catch-up” growth must die out as the efficiency coefficient, E , approaches one, or as the economy catches up to technologically advanced nations. But because of rent seeking and of the way type (b) growth is sometimes implemented, it may also die out with E below one and falling. Such growth benefits from a market economy with orientation of production to demand. Otherwise it is hard to ensure that the right technologies will be imported and that the domestic economy will be able to absorb and integrate them in such a way as to expand production in a cost-effective manner. But rapid growth is still possible with a multitude of subsidies and controls, including barriers to entry and exit of firms, restrictions on resource mobility, tightly-regulated capital markets, and soft budget constraints for some firms, notably banks and other financial institutions. These controls are used to channel resources into technology acquisition and into sectors believed to have growth potential, using the technologies to be imported. In addition, the technology-importing country may promote information and technology sharing between firms in order to disseminate technology more rapidly, albeit at the cost of discouraging innovation, since a firm subject to such promotion finds it harder to keep technological secrets from its sharing partners. As part of this promotion, the process of learning to use new technologies and to make and market products based on them is likely to be subsidized.

The result is an effort to “govern” the market [Wade 2004], rather than to replace it. It is also a strategy of import substitution, or of restricting imports of designated products and replacing these with domestic production. If this strategy is successful, it will also be a strategy of changing the nation’s comparative advantage toward higher value-added products whose exports are promoted, since—by the Heckscher-Ohlin theorem—it will otherwise end up forever protecting or subsidizing inefficient production. Thus it is both a strategy of import substitution and one of export promotion, as well as a policy of *dirigisme*, in the sense of promoting growth in specific sectors of the economy. In East Asia, the basic evolution was away from labor-intensive toward physical-capital-intensive and then knowledge-intensive (or human-capital-intensive) production.

Restrictions, subsidies, and controls were needed because such a strategy meant specializing against current comparative or cost advantage. By raising A_D much more rapidly than A was rising, these interventions probably increased growth for a time, both in Western Europe after World War II and later in non-socialist East Asia [Eichengreen 2007; Wade 2004].³ But the restrictions, subsidies, and controls also increased β_D and created new rents, which had a long-term depressing effect on E .

The Policy Dilemma in Sustaining Growth

This brings us to a major policy dilemma in sustaining growth. As indicated, controls and subsidies can sometimes be used to temporarily speed up extensive growth or intensive growth based on imports of technology already in use abroad. The required technologies are known commodities with known requirements for effective utilization, and such growth can therefore be implemented with forced saving and channeling of resources brought about via controls, subsidies, and quotas. This ability to speed up growth is attractive to politicians and government officials when the latter are judged on short-term performance.

Once installed, however, the controls and subsidies have a tendency to persist because they create “vulnerable rents” or rents that would disappear with their removal. Such rents accrue behind any effective barrier to resource mobility. They go to inputs in protected and subsidized firms and often as well to government officials involved in making and carrying out the *dirigiste* policies. Political entrepreneurs representing the owners of these inputs (such as trade and professional unions) are likely to devise ways of collecting portions of these rents, which they then invest in political influence—using lobbying and contributions or bribes to politicians and public officials—designed to perpetuate the rents in question [Olson 1965].

A government might try to protect in advance against perpetuation of these rents by including sunset provisions that automatically bring the subsidies and controls to an end once certain criteria have been met or a specified time period has elapsed. But such provisions may also galvanize political entrepreneurs representing recipients of the vulnerable rents into action and could make the subsidies/controls even harder to get rid of. This is part of the reason why governments find it hard to make credible long-term commitments.

By the time the industries being promoted catch up technologically with the most advanced nations, the economic usefulness of promoting them further vanishes. A_D/A is now growing more slowly if at all, and the government is left with subsidies/controls that are detrimental to efficiency—or which depress E because of the direct and indirect costs of rent seeking—but which are politically difficult to remove. It is possible to achieve both extensive growth and growth based on imported technology already in use abroad without subsidies, restrictions, and controls, but often only at a slower pace [Wade 2004], since there will be less mobilizing of savings, less channeling of technology and resources into growth industries, and possibly lower rates of physical and human capital formation.

In generating type (c) growth, moreover, *dirigiste* policies are likely to do more harm than good. We must ask how a government can know which specific industries, technologies, and production methods to promote or which specific types of human and physical capital to accumulate. Without observable past experience as guide, the knowledge necessary to determine a best future direction of growth either does not yet exist or else is scattered among various economic agents—producers, consumers, researchers, etc.—and often remains tacit. An advantage of markets originally noted by Hayek [1945] is that they can work efficiently without requiring this information to be centralized, which it is virtually impossible to do. Thus a government can only know the best direction to take by observing and evaluating the past experiences of other nations and, possibly, its own past experience.

Lacking these observations, uncertainty about the best future direction of growth becomes paramount. No central authority can say with assurance which technologies will blossom in the future and what the resulting growth industries will be or which specific types of human and physical capital they will require. Thus targets, controls, and subsidies designed to promote specific “growth” industries are likely to become counter-productive. The same instruments that increased growth of type (a) and (b) become fetters to growth of type (c). If one were designing policies to maximize long-term growth, one would choose fewer sector-specific interventions than in maximizing short-term growth. Because they increase rent seeking, create barriers to resource mobility (plus excess capacity in oft-chosen priority sectors such as autos), and discourage innovation by promoting information and technology sharing, these interventions may fail to raise E over the long term. In the short term, they may raise A_D rapidly, but they also increase β_D , and after the benefits of the former are realized, the costs of the latter persist.

Several countries in non-socialist East Asia are examples of growth in which government played a leading role—in facilitating technology imports, in channeling resources into targeted growth sectors, in disseminating technologies to domestic producers, and in assisting the process of learning to use these

technologies efficiently. These nations sought export-led expansion, building efficient export sectors in the process. For three decades and more, they achieved an "East Asian economic miracle".

Basically, the East Asian model was a package of components, beginning with technology acquisition and absorption, but also including large public investments in infrastructure and in technical education, together with some targeting of sectors whose growth was to be promoted. These industries were subsidized and protected, and large amounts of both private and public capital were invested in them. This required controls on financial markets in order to channel loans to favored borrowers, as well as mainly non-tariff barriers to imports, which were often tightly controlled. In this way, the countries in question built up their physical and human capital and shifted their comparative advantage toward higher value-added products. In retrospect, they also benefited from the cold war, which made Western nations (especially the U.S.) willing to allow them access to technology at low cost, as well as to their domestic markets, without requiring reciprocity.

These nations mobilized their resources to take advantage of the resulting opportunities, but the economic systems they built also contained serious weaknesses which came to light during or prior to the "Asian" crisis of 1997 [Krugman 1994; IMF Staff 1998]. (However, for an alternate view, see Wade [2004], esp. pp. xiii-liv). Moreover, their growth came largely from capital deepening and increases in labor force participation, rather than from TFP increases [Young 1994]. TFP increases were respectable, but not out of line with many slower-growing nations. The Asian NICs did more successfully exploit the gains from capital deepening that TFP increases made possible, although physical capital investment to GDP ratios also rose rapidly in some of them, notably in South Korea and Singapore [Young 1994].

Economic subsidies and controls benefited not only efficient export firms, but also many inefficient companies, both small and large, which supplied mainly the domestic market. In this way,

prosperity was spread to inefficient sectors, but at the cost of preserving inefficiency in these sectors and of tying up capital in them. In this way, A_D peaked short of A , and A_D could even begin to fall afterward if restrictions and subsidies caused inefficient sectors to become more laggard relative to best practices elsewhere. Sectors benefitting from protection or subsidies resisted reform, in order to protect their vulnerable rents, and budget constraints were often soft for large banks and firms. Promotion of information sharing between firms lowered the cost and speeded up the process of learning about how to use existing technologies productively, but also tended to discourage innovation since it raised the cost of keeping a company's activities secret. In short, *dirigiste* policies left a legacy of rents whose preservation depended on maintaining barriers and disincentives to innovation and entrepreneurship, as well as to resource mobility, and interfered with rational investment choices.

Here Japan is a leading example. For many years, the Japan provided the growth model for much of East Asia, and economic gurus calculated how long it would take Japan to overtake the United States in per-capita GDP. Japan's growth "miracle" appeared to be living proof that government intervention in the form of industrial policy could increase the pace of economic growth. More recently, Japan has been viewed as an example of a stagnant economy in which resources are tied up in inefficient sectors. The growth of real GDP per capita, measured in purchasing power parities of 2005, averaged 8.2% over 1960-1973, but just 1.2% over 1990-2007 [U.S. Department of Labor 2008]. Relative to the U.S., Japanese GDP/capita peaked in 1991. In Taiwan, the period of fastest growth of real per capita GDP, according to official figures (in 2001 prices), was over 1975-1990, at 7.4%, falling to 3.5% over 2000-2007. Growth also slowed in Singapore and in South Korea, although by lesser amounts.

Having well-developed financial markets and freedom from market and trade distortions becomes crucial in generating type (c) growth since these are favorable to innovation and to reaching and maintaining a relatively high value of E . Because *dirigiste* policies no longer raise long-term growth, often the best a

government can do is to establish a favorable climate for investment and competition, with strong protection of property rights. Good corporate governance—especially protection of minority owners against expropriation by majority owners and other company insiders—also appears to be of crucial. The result is far from being a prescription for laissez-faire, since lack of oversight can also stimulate rent seeking and lower E by reducing the quality and raising the cost of information about complex financial products, thereby raising I_D . Perhaps ironically, Government regulation has a major role to play in maintaining competition and resource mobility, in protecting property rights, in combating fraud and other types of manipulation, and in ensuring transparency, with the ultimate goal of tying rents to productivity. Indeed government's regulatory role is likely to become more difficult and complicated—as markets grow more complex and sophisticated—but even more necessary and important than before.

The Role of Democracy

“...democracies per se are not conducive to improved institutions; democratic longevity, however, is.”

Calderon and Chong, 2006

The relationship of democracy to economic growth has been contentious. Many studies suggest either that democracy has no effect on growth vis-à-vis autocracy or dictatorship or that democracy actually reduces growth. (A partial list of these studies is given in Gerring, Bond, Barndt, and Moreno [2005] on p. 1n.) A well-known article by Barro [1996] argues that an increase in democracy raises economic growth when the level of political freedom is low, but reduces growth when the level of freedom is already moderate or high.

However, more recent studies give more optimistic assessments of this relationship. (See, for example, Shen [2002], Halperin, Siegle, and Weinstein [2005], Gerring, Bond, Barndt, and Moreno

[2005], and Rodrik and Wacziarg [2005].) In particular, Halperin, Siegle, and Weinstein argue that democracy is favorable to economic development even for nations that are initially poor. And Gerring, Bond, Barndt, and Moreno (hereafter GBBM) argue that the accumulation of what might be called "democratic capital" unambiguously increases growth. That is, the longer a country has been democratic and the more democratic it has been during this time, the higher is likely to be its subsequent long-term growth—an argument that they buttress with strong empirical evidence. Experience allows democratic institutions to develop and improve, along with the skills needed to operate these efficiently.

GBBM use data from the Polity IV project, which each year assigns a "polity score" between -10 and $+10$, reflecting the extent of democracy or autocracy, to each nation of the world with a population of over 500,000. As indicated, GBBM take into account not only a nation's current polity score, but also past scores as indicators of regime history and indices of how much democratic capital has been accumulated. In this way, their study differs from previous efforts to relate economic growth to type of government. Recent Polity IV data are online at www.systemicpeace.org/polity/polity4.htm. The political system variable, P_s , in the right-hand side of (4) is an index of this democratic capital. For any given economy, it therefore depends on that nation's past and present polity scores.

In the final analysis, the advantage of democracy is that accumulating democratic capital is favorable to relatively high and stable values of E . Increases in P_s either bring about or are analogous to decreases in β_D/β and in I_D/I and to increases in A_D/A . Thus E is increasing in P_s , and higher P_s values also imply values of the other arguments of E that are favorable to keeping E relatively high. This contributes to long-term growth by keeping the marginal product of capital relatively high at any given capital-to-labor ratio, k . One reason for high E values is that democracy tends to be a prerequisite for well defined, enforced, and transparent property rights and for the rule of law, meaning in particular that government itself is subordinate to the law and therefore constrained in making arbitrary changes in

property rights. Democracies also limit the ability of an incumbent government to accumulate power, since these limits, if applied fairly to all, help to preserve political party competition. And democracy is associated with greater freedom to innovate and to compete on domestic markets, as well as less control over and less compartmentalization of information and freer movement of physical and intellectual capital, which is to say relatively high values of A_D/A and relatively low values of β_D/β and I_D/I .⁴

There are three further reasons why accumulating democratic capital increases E .⁵ First, democracy favors protection of human rights and civil liberties and therefore the accumulation and efficient use of human capital [Wintrobe 2004]. Second, the greater a country's stock of democratic capital, the greater its stock of what might be termed "social" capital is likely to be as well. Finally, the accumulation of democratic capital has a negative effect on destructive rent seeking. This is a direct result of the greater *inclusiveness* of democratic polities; the demands of a larger percentage of citizens count in determining supplies of public goods and in influencing government decisions more generally. In fact, democracies supply public consumption goods at far higher levels than do dictatorships, which often substitute club goods available mainly to the ruler and his political elite. Provision of public consumption goods is also income elastic in democracies, but not in dictatorships [Deacon 2003].

We consider these three in turn. First Wintrobe [2004] argues that protection of inalienable human rights—including habeas corpus plus the right to a free and fair trial and to impartial resolution of disputes—is important purely on grounds of economic efficiency. He notes (p. 85) that "Economic efficiency justifies the ownership of private property on the ground that property should be allocated to the party who is most highly motivated to maximize its value. Who is it that can be counted on to manage or take care of a piece of property best? The owner. Human rights give this privilege of 'ownership' of the individual (if you like, of his labour and human capital) to the individual himself or herself." In authoritarian regimes, by contrast, ownership of human capital rests ultimately with the

dictator, whose interest lies in preserving and increasing his own power and wealth. One manifestation of this is shorter life spans under dictatorship than under democracy [Przeworski *et. al.* 2000]. The ability to make better use of human capital is analogous to a decrease in β_D/β and an increase in A_D/A . This is also a consequence of the more inclusive nature of democracies, since basic human rights are public goods.

Second, "social capital" refers to the capacity for mutual trust and to the capacity for co-operation based on this trust [Guiso, Sapienza, and Zingales 2004]. In some societies, trust and co-operation are restricted largely to family units and/or religious sects, ethnic or racial groups, villages or neighborhoods, and other similar communities that produce well-defined common bonds. Such limited trust may be favorable to economic growth in some cases, but could also lead to monopoly, theft, and even violence between the groups in question. It is often not good for the economy as a whole. One accumulates trust by foregoing opportunities to behave opportunistically toward others. Over the long term, someone with a reputation for not taking advantage of others may accumulate IOUs, which can eventually be cashed in. However, the incentive to build a reputation for trustworthiness and honest dealing depends on the expectation of reciprocity. This is why mutual trust may be confined to members of a family or narrowly-defined community with strong group ties.

Yet, trust across groups, or "generalized trust," plays a key role in economic development. It is the capacity for this kind of trust that we have in mind when speaking of "social capital." Together with the rule of law, generalized trust makes possible complex and extensive forms of specialization and cooperation in production and exchange, including large and sophisticated financial markets. Virtually any type of exchange in which one party receives a promise of future payment in return for a tangible benefit delivered now is facilitated by trust, and the more widespread the trust, the greater the possibilities for exchanges of this nature. Conversely, the more limited the trust, the greater the limits

on such exchanges, which are also limits on opportunities for productive investment and therefore to the movement of capital into higher-value uses. A greater capacity for generalized trust is analogous to a reduction in β_D/β and an increase in A_D/A .

Democratic governments have a stronger incentive to foster the development of generalized trust and to be tolerant of conditions that favor the development of social capital than do authoritarian regimes. A key feature of the current government in most democracies is an expectation of future loss of political power, followed by subsequent opportunities to regain that power. Loss of power is not permanent, because leading parties or coalitions alternate in forming the government, depending on electoral success. They may also share control of government at any point in time. By contrast, once a dictatorial regime loses power, its chances of returning are usually low, and former leaders may face death, imprisonment, exile, or other punishment. Dictatorships can also base themselves on relatively narrow elites, whereas political success in democracy requires the support of broadly-based coalitions in order to gain enough votes to take power—the basic reason why democratic polities are more inclusive than dictatorships, although other factors are also involved—see Carson [2007, p. 15].

In this context, generalized trust makes it easier for different groups to co-operate in political as well as in economic life and, in particular, to co-operate in efforts to replace a current government. An authoritarian regime can only lose from the latter co-operation, whereas a political party in a democracy may gain by using it as part of the coalition that sustains it in the ongoing electoral competition for power. A party out of power needs such a coalition to get (back) in, and parties must be able to rebuild their coalitions from time to time. Thus a dictatorship will usually view the building of trust or social capital outside its control as a potential threat, whereas a democratic government or its opposition may just as well see this as giving it a potential advantage.

In addition, political party competition for votes gives citizens more power vis-a-vis government. Inalienable human rights, as well as the rule of law, are therefore more likely to exist in democracies; again this relates to the more inclusive nature of democracy since these are basic public goods. A key result is better use and allocation of human capital and also expansion of the time horizons of economic decision-makers. In turn, the latter is favorable to the building of trust and co-operation. Under dictatorship, rights tend to be granted and revoked at the pleasure of the ruling elite and are therefore alienable. The political risk that existing rights will be taken away always has to be factored into decisions related to investment and finance.

Finally, the accumulation of democratic capital has a negative effect on destructive rent seeking. A detailed argument is given in Carson [2007], but the basic reason is that rent seeking can provide a higher benefit at a lower cost to a dictator than it can to a strong democratic government. Inclusiveness is the enemy of destructive rent seeking because it gives a political voice to those who would bear its costs and raises their access to information (or reduces I_D). Empirically, voting appears to be efficient in rewarding or punishing politicians according to their performance in office, possibly mainly because swing voters are well informed [Peltzman 1990; Silva and da Silva Costa 2006].

By contrast, a dictator can rely mainly on the support of a relatively small elite base, whose members are paid directly with access to rents [Wintrobe 2004]. (An example of such a base would be the *nomenklatura* elite in nations ruled by communist parties.) A dictator needs a support base because he faces potential threats to his wealth and power and must therefore command the loyalty of an elite on whom he can rely for political support. Eliminating electoral competition does not eliminate competition for power, but rather shifts this to arenas where a much smaller percentage of the population determines who will rule. The result is a less inclusive society. Citizens will have less influence over policy than under democracy since their votes do not count in choosing the government. A dictator can

use rents to buy the support of his elite base and shift the cost of this onto citizens without a political voice, a practice that grows harder as a polity becomes more inclusive.

Under dictatorship, there is no free press, and secrecy in government is paramount—conditions that are ideal for destructive rent seeking. Individuals within the political elite have a correspondingly high degree of freedom to seek rent, and their rent seeking is likely to be subsidized. This is because members of the dictator's elite base also pose a threat to him; when dictators are overthrown, it is usually by government insiders [Svolik 2009]. One way to reduce this threat is to allow and even encourage elements of this base to compete with one another for rents, thereby diverting their attention and interest from efforts to overthrow the dictator, while also impeding their ability to build the kind of trust that would be necessary if they are to co-operate in his overthrow. In addition, the dictator's elite base is likely to be heavily involved with the inefficient enterprises that often result when policy is designed to favor growth of type (a) or (b) above, making the reforms needed to achieve type (c) growth more difficult to institute than under democracy.

Conclusion

The policy dilemma in generating growth that can be sustained over the long term is the perceived desirability of instituting sector-specific subsidies and controls to speed up growth that is extensive and/or based on imported technology that is already in use abroad. The government is then left with subsidies/controls that are detrimental to efficiency—or which depress E because of the direct and indirect effects of rent seeking—but which are politically difficult to remove. The resulting legacy becomes a fetter to growth as growth has increasingly to be based on domestic innovation and sharing of new technology developed abroad. In the final analysis, accumulating democratic capital is the best and

most basic way to reduce this legacy, thereby ensuring economic growth that will sustain itself.

Democracies are a long way from being perfect, but when we are disappointed with the results of democracy, it sometimes helps to remember Churchill's remark that "Democracy is the worst form of government—except for all those other forms that have been tried from time to time."⁶

Notes

1. More general discussions of the factors favorable to economic growth can be found in Mankiw [1995], Barro [1996], Howitt [2004], Gerring, Bond, Barndt, and Moreno [2005], Halperin, Siegle, and Weinstein [2005], and in sources cited by these authors.
2. In addition, setting outputs at their bribe-maximizing levels may have undermined central planning to a degree. See Shleifer and Vishny [1992].
3. Regarding Europe, see Foreman-Peck and Frederico [1999] and Eichengreen [2007].
4. Dictators can tap directly into monopoly profits and use a monopoly as a repository of jobs for supporters and relatives. They can also more easily control production in an industry that is monopolized or cartelized. A democratic government is more constrained in using a monopoly in this way, and monopoly is therefore less appealing to it in light of the costs that monopoly imposes on its customers.
5. Additional reasons and discussion are given in Halperin, Siegle, and Weinstein.
6. From a speech in the British House of Commons, Nov. 11, 1947.

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